PROBLEMS FOR SOLUTION.

ARITHMETIC.

71. Proposed by J. C. CALDERHEAD, M. Sc., Professor of Mathematics in Curry University, Pittsburg, Pennsylvania.

A man owes me \$200 due in 2 years, and I owe him \$100 due in 4 years; when can he pay me \$100 to settle the account equitably, money being worth 6%?

72. Proposed by W. H. CARTER, Professor of Mathematics, Centenary College of Louisiana, Jackson, Louisiana.

Though the length of my field is 1-7 longer than my neighbor's, and its quality is 1-9 better, yet as its breadth is 1-4 less, his is worth \$500 more than mine. What is mine worth? *Encyclopedia Brittanica.*

73. Proposed by NELSON S. RORAY, South Jersey Institute, Bridgeton, New Jersey.

I would like to change problem 70, Arithmetic, to read as follows and have it proposed for solution:

A owes me \$100 due in 2 years, and I owe him \$200 due in 4 years. When can I pay him \$100 to settle the account equitably, money being worth 6%, and *the interest to draw interest until the time of settlement?*

Solve by simple arithmetic without the aid of algebraic symbols.

74. Proposed by JOHN T. FAIRCHILD, Principal of Crawfis College, Crawfis College, Ohio.

When U. S. bonds are quoted in London at 108¾ and in Philadelphia at 112¼, exchange \$4.89½, gold quoted at 107, how much more was a \$1000 U. S. bond worth in London than in Philadelphia?

ALGEBRA.

74. Proposed by NELSON S. RORAY, South Jersey Institute, Bridgeton, New Jersey.

Solve according to the conditions given:

$$\sqrt{x+1} + \sqrt{x} = \frac{3}{\sqrt{1+x}}.$$

First, square without transposing and then solve; second, transpose $\sqrt{x+1}$ and then solve. Obtain the same roots as in the first way of solving.

75. Proposed by B. F. BURLESON, Oneida Castle, New York.

Mr. B's farm is in shape a quadrilateral, both inscriptible and circumscriptible, and contains an area of $k=10752$ square rods. The square described on the radius of its inscribed circle contains $r^2=2304$ square rods; while the square described on the radius of its circumscribed circle contains an area of $R^2=7345$ square rods. Required the lengths of the sides of his farm.

76. Proposed by E. B. ESCOTT, Fellow in Mathematics, University of Chicago, Chicago, Illinois.

Prove the identities

$$2-\sqrt{2}=\tfrac{1}{2}+\frac{1}{2^2.3}+\frac{1}{2^3.3.17}+\frac{1}{2^4.3.17.577}\cdots\cdots$$

$$\frac{5-\sqrt{5}}{2}=\tfrac{1}{1}+\tfrac{1}{3}+\frac{1}{3.7}+\frac{1}{3.7.47}+\frac{1}{3.7.47.2207}\cdots\cdots$$